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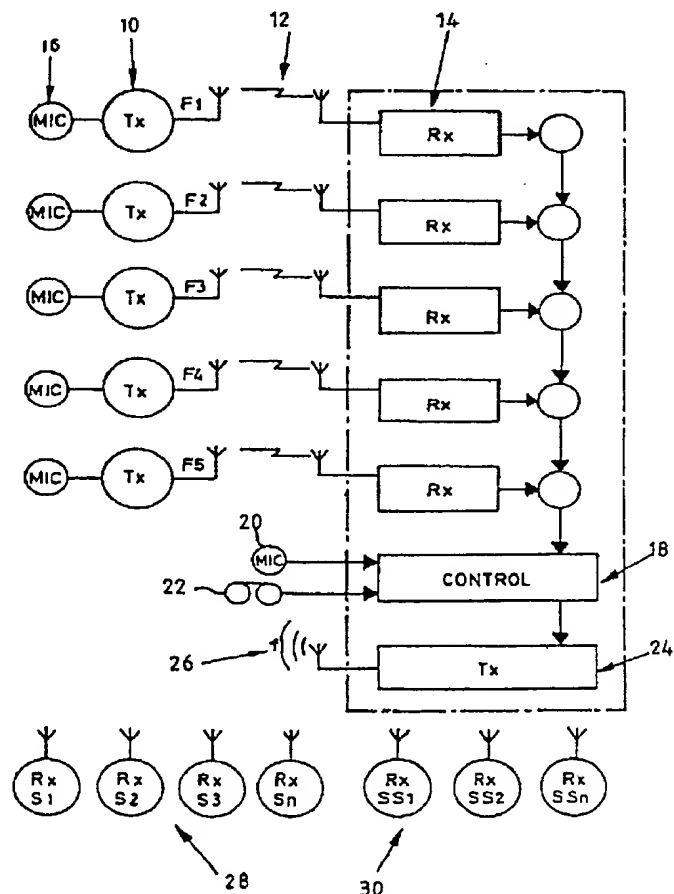
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## (54) Broadcasting method and apparatus

(57) A method of broadcasting and apparatus therefor find particular application in relaying and broadcasting sound effects, including the voices of referees and players, which occur on-field during sports events. The method comprises the steps of providing one or more primary broadcasters, such as players, referees or officials involved in the event, with a primary broadcast radio transmitter 10 and a microphone 16 connected thereto to broadcast, on a primary broadcasting frequency 12, such audible signals as are generated within the area of sensitivity of the microphone 16. The primary broadcasts are received by one or more primary receiving stations 14 and the signals from the receiving stations are mixed and controlled in a secondary broadcasting station 18,24 from where a controlled signal is broadcast on a secondary broadcasting frequency 26, different from the primary broadcasting frequencies 12, to a number of receivers 28,30 located in the vicinity, or carried on the persons of, a predetermined number of spectators of the event.

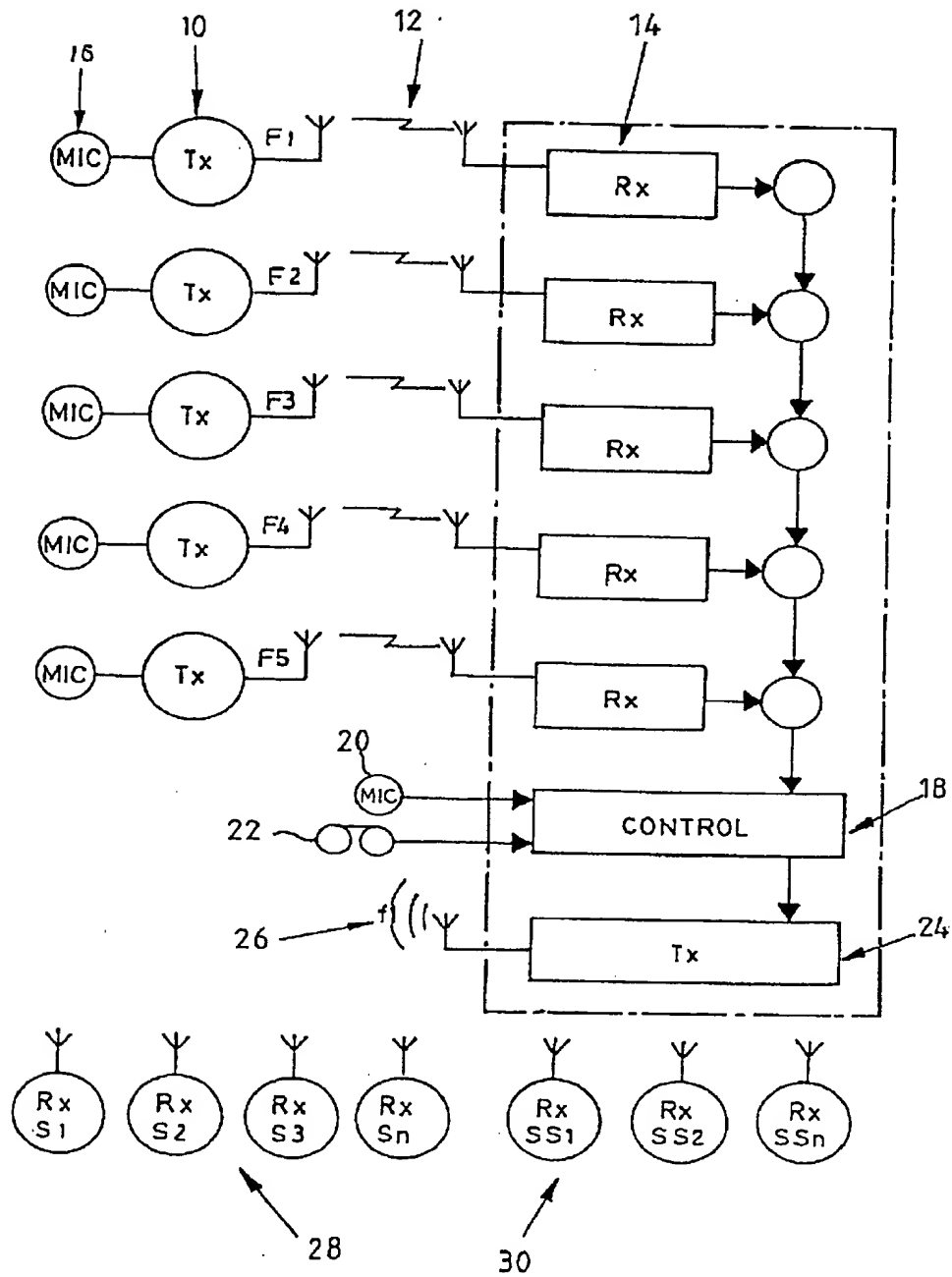


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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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## SPECIFICATION

## Broadcasting method and apparatus

- 5 This invention relates to a method of broadcasting and apparatus therefor.

The invention finds particular application in the relaying and broadcasting of sound effects including the voices of officials and players,

- 10 which occur on-field during sports events and will be described with reference to such an application by way of example.

- The method of broadcasting of the invention comprises the steps of locating a radio transmitter in the vicinity of one or more primary broadcasters or broadcast stations, such as players, referees, controllers or control positions on or adjacent the field, the radio transmitter being connected to a microphone enabling the primary broadcaster to broadcast such audible signals as are generated within the area of sensitivity of the microphone, receiving the transmitted signal or signals from one or more primary broadcasters, and re-transmitting or broadcasting the received signal to a plurality of compatible spectator radio receivers located in the vicinity of a pre-determined number of spectators of the event.

- In its simplest form, the method could involve a direct broadcast from the primary broadcaster to the spectator receivers.

- The primary broadcast transmitter and the spectator receivers may be small and portable enough to be carried on the persons of the primary broadcaster and the spectators respectively. Alternatively, the spectator receivers may be mounted in one or more spectator positions, such as, exclusive use grandstand viewing booths or suites. In such an event, the spectator receiver will, in suitable cases, be provided with a loudspeaker arrangement.

- In the application of the invention to the broadcasting of sports events like rugby, gridiron football, boxing, soccer or basketball, the primary broadcast transmitter may be carried on the person of the referee or official closest to the event. This would have the effect that anything occurring on the field in the vicinity of the referee or official will be received and eventually broadcast thereby giving a spectator a sense of immediate involvement in the excitement of the event.

- The primary broadcast transmission may be carried out on a first primary broadcasting frequency while the spectator transmission or broadcast may be carried out on a second, or secondary broadcasting frequency.

- In the preferred form of the invention, where a plurality of primary broadcasters are involved, a plurality of primary broadcast transmissions may be transmitted to corresponding primary receiving stations each comprising a receiver, the primary broadcasts being transmitted on different frequencies on a set of primary broadcasting frequencies, the

signal from each primary receiving station being added and controlled secondary broadcasting in a central secondary broadcasting station from where a controlled signal may be broadcast on a secondary broadcasting frequency which is different to the primary broadcasting frequencies. This denies spectator access to the primary broadcast, should this be desired, and allows effective control of the broadcast system.

- The operator in the secondary broadcasting station may select a signal from any one or more primary receiving station receivers for re-broadcast, depending on the currency of the event being reported on. For example, where a plurality of events occur virtually simultaneously, such as athletics track events, certain events may be less current or exciting than others. The more exciting events or events may then be selected for broadcast by the secondary broadcasting station operator.

- The invention includes primary broadcasting apparatus comprising one or more radio transmitters each connected to a microphone and adapted for location in the vicinity of one or more primary broadcasters in respect of an event, a primary radio receiver or receivers adapted to receive the transmitted primary broadcast signal or signals, secondary broadcasting apparatus connected to the primary receiving apparatus and adapted to re-broadcast one or more selected signals as a secondary broadcast to a plurality of radio receivers located in the vicinity of a predetermined number of spectators of the event.

- The secondary broadcast station may include the facility to add extraneous signals, such as tape-recorded and microphone signals to the secondary broadcast. This enables the inclusion of entertainment or advertising material as well as commentary on the event.

- In order that present invention may be more readily understood, reference will now be made to the accompanying drawing which is a diagrammatic representation of broadcasting apparatus for sport events according to the invention.

- The sports event broadcasting apparatus shown in the drawing illustrates the use of a plurality of primary broadcast transmitters 10 transmitting on a first set of primary broadcasting radio frequencies 12 to a plurality of primary receiving station receivers 14. Each primary broadcasting transmitter 10 is provided with a microphone 16 which picks up sounds from the vicinity of the primary broadcasting station. These sounds are then transmitted to the primary receiving station receiver 14. The primary broadcast transmitter 10 is light in weight and portable and is intended to be carried on the person or referee or official for the event. Virtually everything that is said by the referee and in the vicinity of the referee, such as by the sportsman involved in the event, will be picked up by the

microphone 16 and transmitted to the corresponding primary receiving station receiver 14.

In the illustrated embodiment, a plurality of officials are issued with primary broadcasting transmitters 10 while the primary receiving station receivers 14 will be located at a central control, such as a secondary broadcast station in the sports stadium for instance. The signals received by the various primary receiving station receivers 14 will be added and controlled from a central control 18 into which voice commentary from a microphone 20 and extraneous signals from, for instance, a tape deck 22 can be included. In this manner, both commentary and advertising can be introduced.

The controlled signal is then transmitted via a secondary broadcast transmitter 24, on a secondary broadcast radio frequency 26, which is different from the set of primary broadcast frequencies 12, to a plurality of small portable radio receivers 28. These may be carried on the persons of predetermined spectators who, typically, will pay for the privilege of receiving the broadcast. Alternatively, the secondary broadcast could be relayed by radio to a number of receiver and loudspeaker systems 30 mounted in enclosed exclusive use spectator suites. This could be done by means of a cable distribution network.

By using a secondary broadcast frequency 26 different from the primary broadcast frequency or set of frequencies 12, the spectator receivers 28 and 30 may be denied access to the primary broadcast transmissions prior to control and mixing of these transmissions.

Either the primary or the secondary broadcasts could be relayed, by radio or cable, to one or more radio and television broadcasting systems for control, mixing and onward transmission to the viewers and listeners of these stations.

It will be appreciated that the number of primary broadcast transmitters 10 and primary receiving station receivers 14 shown in the drawing may vary from one set to more than the number shown.

#### CLAIMS

1. A method of broadcasting in respect of an event comprising the steps of locating one or more primary radio transmitters in the vicinity of one or more primary broadcast stations situated within the area of occurrence of the event, each primary transmitter being connected to a microphone enabling the primary transmitter to transmit a primary broadcast of audible signals generated within the area of sensitivity of the microphone, receiving the primary broadcast from one or more primary transmitters and re-broadcasting the received signal in a secondary broadcast to a plurality of compatible spectator radio receivers located in the vicinity of a predetermined number of spectators of the event.

2. A method according to claim 1, in which the secondary broadcast is transmitted on a frequency different from that of any one of the primary broadcast frequencies.

3. A method according to claim 2, in which, for a plurality of primary broadcasting stations, a plurality of primary broadcast transmissions are transmitted by a plurality of primary transmitters to corresponding primary receiving stations each comprising a receiver, the primary broadcasts being transmitted on different frequencies in a set of primary broadcasting frequencies and the signal from each primary receiving station being added and controlled in a secondary broadcasting station from where a controlled signal is broadcast on a secondary broadcasting frequency different to the primary broadcasting frequencies.

4. Broadcasting apparatus comprising one or more primary radio transmitters each connected to a microphone and adapted for location in the vicinity of one or more primary broadcasters in respect of an event, a primary radio receiver corresponding to each primary transmitter and adapted to receive the signal transmitted thereby, secondary broadcasting apparatus connected to the primary receiving apparatus and adapted to transmit, in a secondary broadcast to a plurality of spectator radio receivers in the vicinity of a predetermined number of spectators of the event, one or more of the signals received by the primary radio receivers.

5. Apparatus according to claim 1, in which the central broadcasting station includes means to add extraneous signals to the secondary broadcast.

6. Apparatus according to claim 4 or 5, in which at least one of the primary broadcast transmitters and at least some of the spectator receivers are sufficiently portable to be carried on the persons of the primary broadcasters and the spectators respectively.

7. Apparatus according to claim 4 or 5, in which at least one of the spectator receivers are located within exclusive use spectator suites and connected to loudspeaker systems adapted audibly to broadcast the received secondary broadcast.

8. Apparatus according to any one of claims 4 to 7, in which each primary broadcast transmitter is adapted to transmit on a different primary broadcast frequency and the secondary broadcast transmitter is adapted to transmit on a frequency different from the primary broadcast frequencies.

9. Apparatus according to claim 8, in which, for a plurality of primary broadcast stations, the apparatus is adapted for the primary broadcast transmitters to transmit, each on a different frequency within a set of primary broadcasting frequencies, and includes a number of corresponding primary receiving station receivers each adapted to receive the signal or a single primary broadcast transmitter and a

secondary broadcasting station connected to the primary receiving stations and including means to add and control the signal received from the primary receiving stations, the secondary broadcasting station being adapted to broadcast to a plurality of spectator radio signal receivers on a secondary broadcasting frequency different to the primary broadcasting frequencies.

- 10 10. Broadcasting apparatus constructed, arranged and adapted to operate substantially as hereinbefore described with reference to the accompanying drawing.

- 15 11. A method of broadcasting, substantially as hereinbefore described with reference to the accompanying drawing.

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